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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,869	08/28/2003	Takehisa Takagi	TAGAKIII	6355
1444	7590	05/03/2006	EXAMINER	
BROWDY AND NEIMARK, P.L.L.C.			LEWIS, BEN	
624 NINTH STREET, NW				
SUITE 300			ART UNIT	
WASHINGTON, DC 20001-5303			PAPER NUMBER	
			1745	

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/649,869

Applicant(s)

TAKAGI ET AL.

Examiner

Ben Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/28/03.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 3-4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is not clear to the examiner how the fuel cell would remain in operation when blowers are arranged in opposition to the both opened ends of the oxygen grooves on the oxygen passage plates of the cell stack.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kenyon et al. (U.S. Patent No. 6,423,437 B1) and further in view of Lee et al. (U.S. Pub. No. 2003/0219635 A1).

With respect to claim 1, Kenyon et al. disclose a passive air breathing fuel cell wherein the polymer electrolyte fuel cell of the present invention includes a plurality of fuel cell units arranged along a common central axis in a stack. The fuel cell units may be formed in a conventional manner, and each includes a polymer electrolyte membrane. The stacked fuel cell units have an inner periphery defining a fuel flow channel through which fuel can flow in an axial direction. An electrically conductive current collector is electrically connected to an anode of a fuel cell unit at one end of the stack and an electrically conductive current collector is electrically connected to the cathode of a fuel cell unit at another end of the stack. A fuel supply inlet is positioned at one end of the stack to direct fuel therethrough to the flow channel (Col 2 lines 15-30). This type of passive fuel cell has a stack of fuel cell units **11** which are held together in the stack by end plates **12** and **13**. A bolt **15** extends through a central fuel supply channel **16**, and nuts **17** and **18** are threaded onto the ends of the bolt **15** into engagement with the end plates **12** and **13**, respectively, to press on the end plates, thereby compressing the stack of fuel cell units **11** and holding the stack together. An upper current collector plate **20** is mounted in the stack between the end plate **12** and the uppermost fuel cell unit **11** in the stack, and a bottom current collector plate **21** is mounted between the bottom end plate **13** and the lowest fuel cell unit **11** in the stack (Col 3 lines 45-67). As also shown in the more detailed view of FIG. 3, the bottom nut

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48 is threaded onto the threaded bottom end 70 of the bolt 46 into engagement with the end plate 44, with an O-ring 71 seated in a groove in the nut 48 to provide an airtight seal between the end plate 44 and the nut 48 (Col 6 lines 45-55). If desired, a center manifold 75 may be mounted within the fuel flow channel 35 around the bolt 46 to distribute fuel and to help distribute moisture evenly through the length of the flow channel 35 (Col 7 lines 1-15). Kenyon et al. do not specifically teach wherein the oxygen passage plate comprises a plurality of opened grooves on a surface thereof opposed to the oxygen electrode, and the grooves are opened outside at both ends thereof. However Lee et al. discloses a cooling system for a fuel cell stack wherein the electrically conductive plates sandwiching the MEAs may contain an array of grooves in the faces thereof that define a reactant flow field for distributing the fuel cell's gaseous reactants (i.e., hydrogen and oxygen in the form of air) over the surfaces of the respective cathode and anode. These reactant flow fields generally include a plurality of lands that define a plurality of flow channels therebetween through which the gaseous reactants flow from a supply header at one end of the flow channels to an exhaust header at the opposite end of the flow channels (Paragraph 0004). Therefore it would have been obvious to one of ordinary skill in the art to incorporate grooves in the faces of the plates of Lee et al. into the fuel cell of Kenyon et al. because Lee et al teach that the MEAs may contain an array of grooves in the faces thereof that define a reactant flow field for distributing the fuel cell's gaseous reactants (i.e., hydrogen and oxygen in the form of air) over the surfaces of the respective cathode and anode. (Paragraph 0004).

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kenyon et al. (U.S. Patent No. 6,423,437 B1) as applied to claim 1 above and further in view of Reiser (U.S. Patent No. 6,497,971 B1).

With respect to claim 2, Kenyon et al. disclose a passive air breathing fuel cell in paragraph 2 above. Kenyon et al. does not specifically teach wherein blowers for blasting an air into the grooves formed on the oxygen passage plates are provided on the fuel cell to face the grooves. However Reiser discloses a method and apparatus for improved delivery of input reactants to a fuel cell assembly wherein the fuel cell stack assembly includes a plurality of individual fuel cells each having an electrolyte, cathode and anode, and the cell stack assembly is adapted for defining anode flow fields for exposing the anodes to a fuel, cathode flow fields for exposing the cathodes to an oxidant, and for preventing the commingling of the fuel and oxidant reactants between adjacent anodes and cathodes. Also included are input and output manifolds in fluid communication with the cathode flow fields, and at least one blower mounted with one of the manifolds for flowing oxidant through the cathode flow fields (Col 2 lines 30-45). Therefore it would have been obvious to one of ordinary skill in the art to incorporate the blowers of Reiser into the fuel cell system of Kenyon et al. because Reiser teach that mounting the blowers 17 with the fuel cell apparatus is considered to have several advantages. The blowers can be low power, relatively quiet, and include variable speed motors, such as a variable speed a.c. or d.c. motors, that can be controlled to tailor the

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481.

The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ben Lewis


PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER

Patent Examiner
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